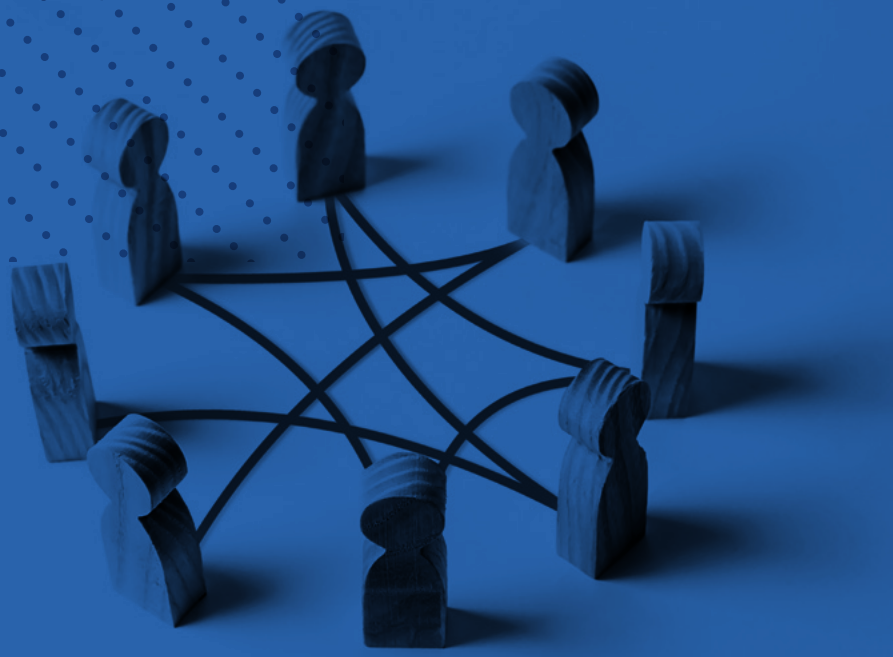
MANAGERIAL COMPETENCIES AS A KEY FACTOR FOR THE SUCCESS OF HEIS

Actions to strengthen leadership, a **Quebec-Mexico** collaborative study



Report on the competencies inventory for senior management positions in higher education in the Americas

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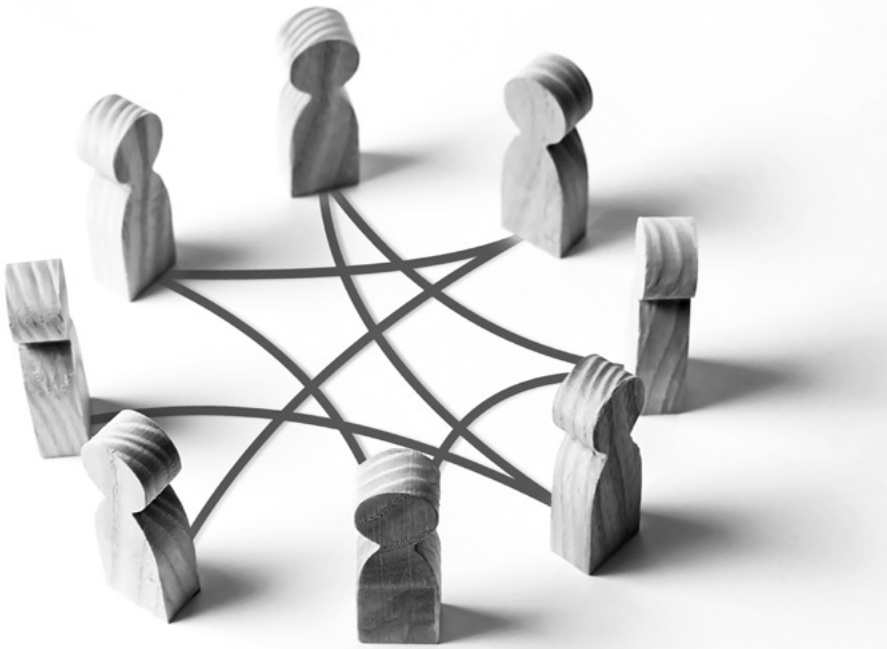

Report on the competencies inventory for senior management positions in higher education in the Americas

In collaboration with:

Universidad Veracruzana

AdvanceHE

ANUIES

ANUT

MANAGERIAL COMPETENCIES AS A KEY FACTOR FOR THE SUCCESS OF HEIS

Actions to strengthen leadership, a **Quebec-Mexico** collaborative study

In the framework of the actions of the 17th Quebec-Mexico Working Group of the Ministry of International Relations and La Francophonie (MRIF) and under the coordination of the Institute of University Management and Leadership (IGLU) of the Inter-American Organization for Higher Education (IOHE), this document represents an inter-institutional effort in collaboration with the Universidad Veracruzana of Mexico, the Advance HE Organization of the United Kingdom, the Asociación Nacional de Universidades e Instituciones de Educación Superior (ANUES) and the Asociación Nacional de Universidades Tecnológicas (ANUT).

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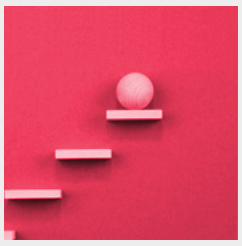

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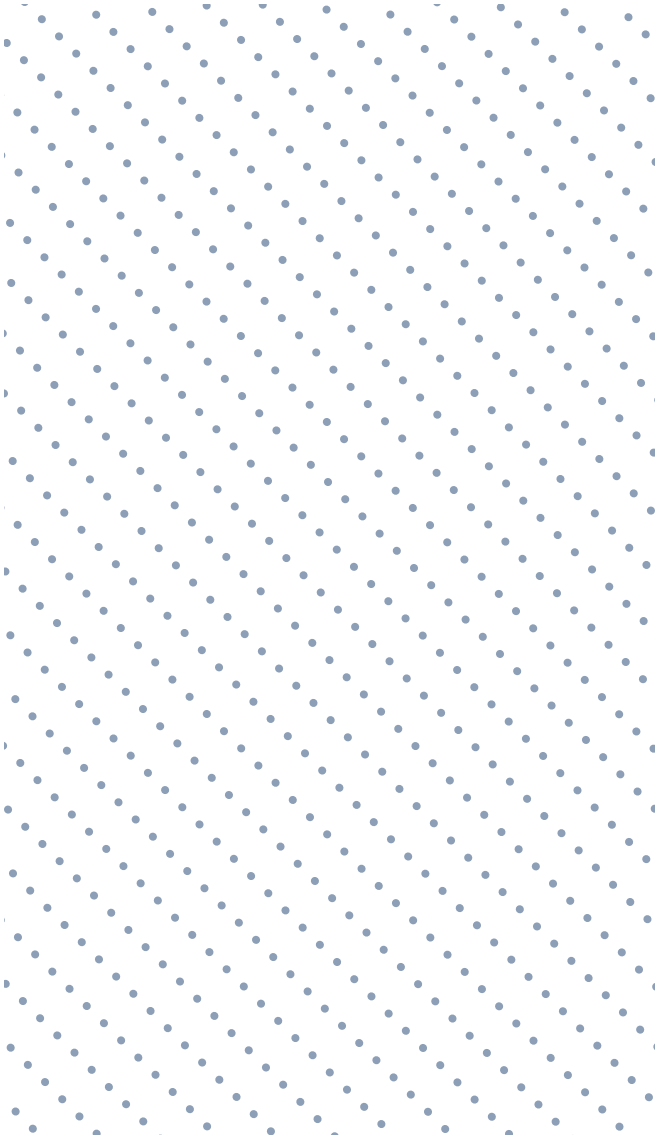


ABSTRACT

The **purpose of this document is to share a theoretical reflection on the context of practice in leadership positions at higher education institutions (HEIs) in Mexico,** with specific reference to competencies as a factor of success, or lack thereof, in the development of executive action.

This document is made up of four main sections, the first of which provides a general approach to the conceptualisation of competencies, the central theme of this research. The second part highlights the methodological processes used to gather the information. The third section summarises the analysis of the most significant results responding to the stated objective.

Finally, the document closes with a presentation, discussion, and conclusions with a view to continuing the development of the topic in a next stage at the Latin American level.

Managerial Competencies as a Key Factor for the Success of HEIs

Actions to strengthen leadership, a Quebec-Mexico collaborative study

1.

INTRODUCTION

Nowadays, it is imperative for the success of institutions **to have competent management teams with the necessary skills to face the sea of changes they must deal with.**

Nowadays, it is imperative for the success of institutions to have competent management teams with the necessary skills to face the sea of changes they must deal with.

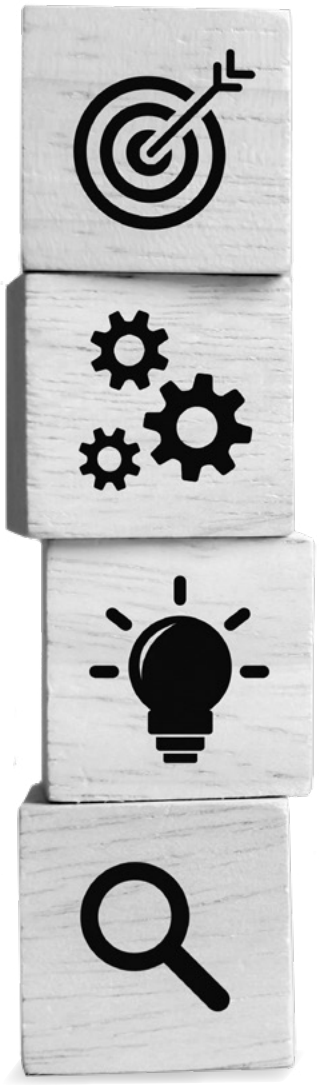
It is a reality that for some time now, research has shown that human capital has become one of the best investments, becoming the centre of institutional strategies. However, the lack of direct studies focusing on the leadership of HEIs has led to a need to fill this gap. The research project "Management competencies as a key factor for the success of higher education institutions: Mexico-Quebec" forms part of a response to this gap.

Funded by the Quebec Ministry of International Relations and La Francophonie (MRIF), this research project is designed and implemented by the Inter-American Organization for Higher Education (IOHE) through its Institute for University Management and Leadership (IGLU), in collaboration with two strategic partners, the *Universidad Veracruzana* in Mexico and Advance HE in the United Kingdom. This project aims to map updated strategic competencies for effective management among the leadership teams of higher education institutions in Mexico and subsequently replicate this approach across the continent.

To achieve the aims of this research, we had the invaluable collaboration of the *Asociación Nacional de Universidades e Instituciones de Educación Superior of Mexico* (ANUIES), the *Asociación Nacional de Universidades Tecnológicas of Mexico* (ANUT) and the research support of the *Université de Montréal* (Quebec, Canada). The research project consisted of two phases, the first (2019-2020) developed through a Focus Group conducted with higher education directors in Mexico City, in which a first map of managerial competencies was identified. In the second phase (2020-2021), a questionnaire was designed and applied, based in part on the initial findings of the focus group and on the document research carried out, which led to the consolidation of the inventory of competencies that is the subject of this research.

2. THEORETICAL FRAMEWORK

The term **"competency"** comes from the Latin **"competentia"**, which means **"authorised to judge"** or **"has the right to speak"**. Sixty years ago, the notion of competency appeared in the scientific literature.



In his article "Motivation Reconsidered: The Concept of Competency", R.W. White (1959) wrote that to demonstrate competency, workers must be able to perform certain tasks or have skills at a specific level of performance. However, the approach proposed by David McClelland (1973), which states that the best predictors of higher job performance are the resilient personal characteristics he calls "competencies" rather than IQ, is generally accepted as the origin of the "Competency School" in the field of business and organisational management.

2.1 Definition of Competencies

There is no single definition of competency. By way of example, the following definitions provide, in an interrelated manner, the core components of the notion of competency. Incode (2012) defines competency as "complex know-how resulting from the integration, mobilisation and adaptation of skills and abilities to situations that share common characteristics". According to Carbone et al. (2016), "human competencies [are conceived] as synergistic associations of knowledge, skills and attitudes, demonstrated by performance within a particular organisational context, adding both business and social values" (p. 48). For Boyatzis (1982), competency is "an underlying characteristic of an individual that is causally related to effective or superior job performance" (p. 21). Finally, for Bush et al. (2017), competency is a set of personal qualifications (knowledge, skills, and attitudes) that enable the individual to perform better. This set of personal qualifications is often associated with manifestations such as acting, mobilising resources, integrating multiple and complex knowledge, learning to learn, learning to take a position, taking responsibility, and having a strategic vision.

The different definitions of the concept of competency reveal the following aspects: competency is a complex synthesis of knowledge, skills and attitudes; it leads to an application, an action, an activity; it belongs to the realm of practice and empirical verification; it aims at effectively exercising critical functions or tasks in a specific work environment; and, its results must be foreseen and measured qualitatively and/or quantitatively

THERE ARE AT LEAST THREE WAYS OF (OR PERSPECTIVES ON) **ANALYSING COMPETENCIES IN MANAGEMENT:**

1. **COMPETENCIES AND MANAGEMENT ROLES**

2. **CORE AND FUNCTIONAL COMPETENCIES**

3. **COMPETENCIES AND MANAGEMENT SECTORS WITHIN THE ORGANISATION**

THE CHARACTERISTICS **OF EACH OF THESE THREE APPROACHES ACCORDING TO** MINTZBERG (1990) ARE SUMMARISED BELOW:

The perspective linking competencies and management sectors sees competencies as the tools necessary to effectively perform management or administrative functions. Mintzberg identifies ten different roles divided into interpersonal, informative, and decision-making categories. In the interpersonal role categories, Mintzberg includes the roles of symbol, leader, and liaison agent. In the informative role category, he includes active observer, information disseminator and speaker. Finally, in terms of competencies linked to decision-making roles, he considers those of entrepreneur, regulator, resource allocator and negotiator.

In this trajectory, the concept of competencies has matured to focus more specifically on the knowledge, skills, abilities, attitudes, values and behaviours associated with high performance in a job (Woodruffe 1993; Beck 2003; Ley and Albert 2003; Nybo 2004; Cardy and Selvarajan 2006; Capaldo et al. 2006). In the case of people in senior university leadership roles, the knowledge and application of effective competencies in HEI management is indispensable.

According to Martínez et al. (2016), managerial competencies are the set of observable knowledge, skills and attitudes that leaders at Higher Education Institution (HEIs) must possess, which will enable them to achieve success in the performance of their functions in the global context.

Puga and Martinez (2008) **identified the competencies that first-level managers** need to develop in any organisation as being:

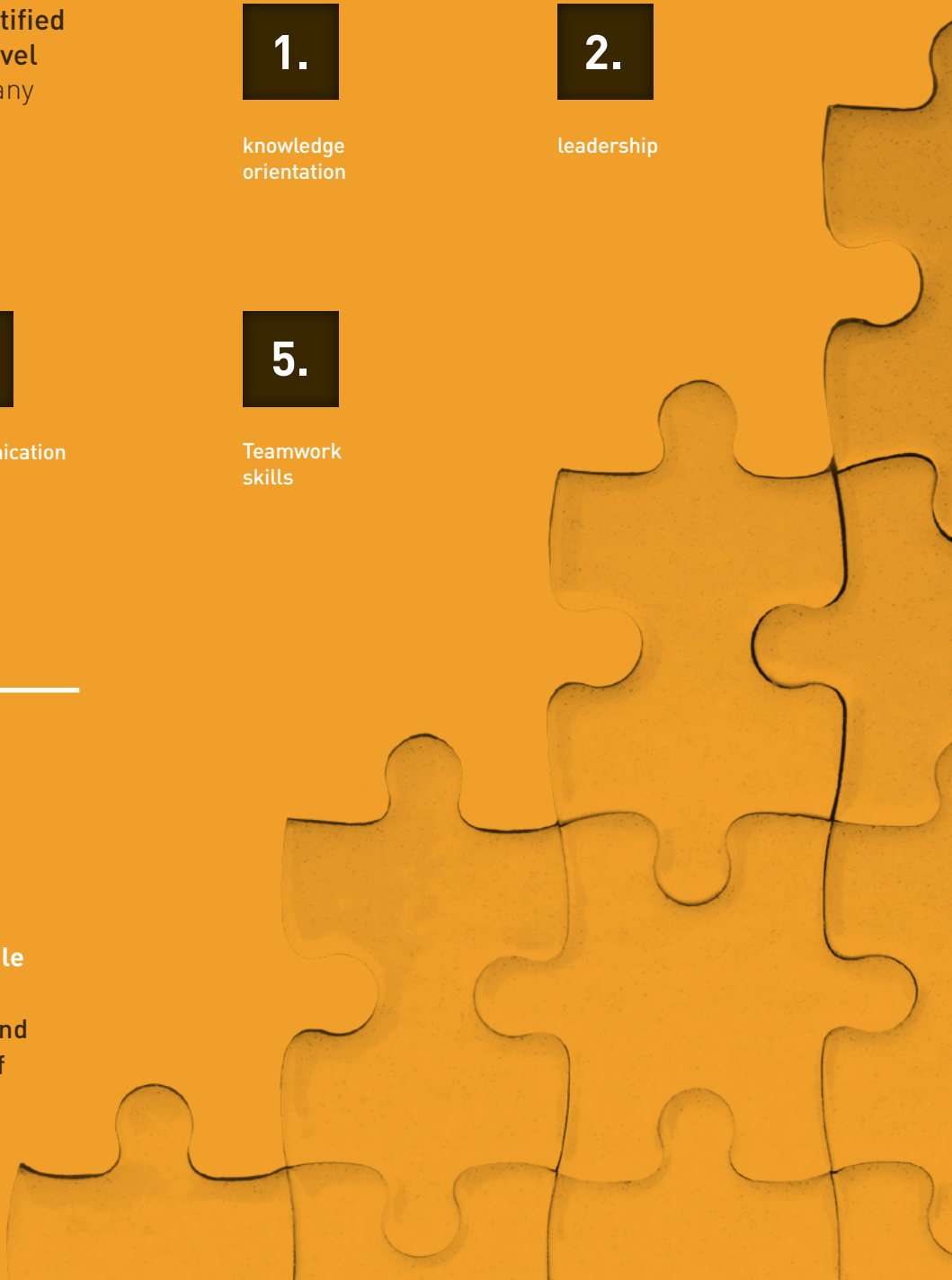
1. knowledge orientation

2. leadership

3. Ethical values

4. Communication skills

5. Teamwork skills



The results of their study identified that the main responsibility of the modern manager is to contribute to the development of the human element in order to equip people with the cognitive tools that enable them to remain viable and add value to the organisation of which they are members.

In an educational institution, the managerial competencies of university teachers are constituted, above all, by the integration and coordination of personal competencies; these represent an integration and coordination of know-how, knowledge and personal qualities (Villalobos and Parés, 2007).

Based on a study by Whetten et al. (2005), the essential managerial skills are: Conflict management, employee motivation, supportive communication, power and influence, effective team building, stress management, leading positive change, developing self-awareness, empowerment, and delegation. This study highlights the knowledge component of management skills and competency as one of the core elements.

Specifically for senior HEI managers, Martínez et al. (2016) propose a model of direct competency in global scenarios: i) self-personal competency and self-learning; ii) competencies for strategic planning and management; iii) quality approach competencies, iv) technological and innovation competencies and; v) multicultural competencies, whereby the skills to be developed are: leadership, analysis and problem solving, emotional intelligence, communication, conflict management, motivation and teamwork, and all of this through values, attitudes and commitment.

In a study carried out by Ascón et al. (2019) with the aim of finding out the skills and competencies of senior managers in HEIs, it was found that leadership, vision of the future, change management, social responsibility, flexibility and resource management and innovation are the main ones to be developed. In other words, the skills that managers need to develop are the transmission of ideas and, on the other hand, motivating staff, guaranteeing innovation and development within the institution, and being flexible with their decisions. They must also be able to exercise leadership efficiently as the most important skill of senior management and to distinguish between authority, power and leadership. These managerial skills in HEIs combine with the accumulation of essential knowledge to allow for management with agility, security, perspective, and accuracy, at the service of the training, development, and extension processes of universities in their given environments. In addition, they must have control over communications and decisions and be aware of the risk that these may imply for society and companies through training, guided by creativity to innovate, planning needs as well as leadership for the development of projects and entrepreneurship (Ascón et al. 2019).

Considering the numerous definitions of the concept of competency, the present research project has integrated, in a single formulation, the definitions of Incode (2012) and Carbone et al. (2016) for the discussion and analysis of the results. This definition is:

> **Human competency consists of complex know how resulting from an integration, mobilisation and synergetic application of knowledge, skills and attitudes, verifiable through specific performance in situations having the same characteristics.**

2.2 Measuring competencies in HEI managers

Competencies through their corresponding attributes and behaviours must be identified and objectively measurable because they are related to the assessment of the performance of individuals and groups in a given situation and function. Moreover, competencies can be acquired and continuously developed within the university context (Bonnefoy, Cerda, Peine, Durán & Ponce, 2004), which is the context of the present research.

Therefore, knowing the effective and high-performance competencies required for the role of university management facilitates the processes of measurement as well as adjustment in order to subsequently design educational programmes that optimise and improve the performance of individuals and the quality of the institution, and these programmes can also include the preparation of future leaders and managers of HEIs and not only training for those who are currently in management functions (Ehrenstorfer, Sterrer, Preymann, Aichinge, Gaisch, 2015).

In HEIs and in work environments, the classification of competencies ranges from basic or generic competencies to more specific ones (Bonnefoy et al., 2004). Generic competencies include forecasting skills involving knowledge, communication competencies involving verbal skills, critical thinking competencies enabling analysis and decision-making, relational competencies associated with attitudes and ethical and humanistic conduct in interpersonal relations, leadership competencies enabling planning and creativity, and competencies for integrating knowledge to be applied effectively.

Given the importance of contextualising the concept of competencies, and in response to the objective of this research, emphasis is placed on finding out which are the most successful senior university management competencies that have already been reported and measured in various research studies in the area and in various countries.

Ehrenstorfer et al. (2015) conducted a qualitative study to determine the competencies required of academic managers at two Austrian HEIs that are representative of both classical and technological universities. They found that the relevant competencies are grouped into the following categories: i) competencies for professional expertise (experience and knowledge), ii) competencies for academic excellence, iii) teaching competencies, iv) leadership competencies, social skills and assertive personality traits; v) competencies in management skills and organisational knowledge competencies specific to higher education institutions.

With regard to the subcategories found in each of these categories of competencies, the first, academic excellence, includes the publication of findings, being up to date in the related academic field, among others related to professional experience.

Relevant competencies in HEIs: organisational expertise and knowledge, academic excellence, leadership, social skills, assertive communication, finance and project management. (Ehrenstorfer et al. 2015)

In Spain, Casani and Rodríguez-Pomeda (2012) conducted a mixed qualitative and quantitative study with the aim of (1) identifying the most relevant competencies from the perspective of university managers (qualitative) and (2) designing a scale of competencies of senior university managers. Based on the results of the interviews, they designed a 20-item scale, which was measured on a sample of valid responses from 44 senior university managers from 50 Spanish public universities. After the relevant psychometric analyses, the scale designed yielded a result of six factors or components that group together the perception of the most relevant training competencies of senior university managers. These are I. organisational transformation, related to management skills, negotiation, and strategic planning; II. firm leadership, related to team leadership, self-confidence, project implementation; III. human resource management; IV. persistent results with regards to people, related to the capacity to influence people, capacity for initiative and orientation towards results; V. theoretical reflection prior to action, total quality management skills, information research skills; and VI. change management, which denotes skills in financial models for the institution, knowledge of organisational evolution and the creation of interpersonal relationships.

In turn, Bonnefoy et al. (2004) designed an instrument that measures the competencies of the quality of senior university management in Chilean universities, as well as the quality of the management of those in charge of university institutions. To do so, they operationalised the competencies of each of the constructs of quality in management. Theoretically, they proposed an instrument with 5 dimensions: I. Institutional management, II. leadership and teamwork, III. cognitive competency, IV. value/attitudinal competency, after analysis of a previous validation by expert judges. However, after the measurement and results of the factorial and principal components analysis, they observed that the scale had a better psychometric behaviour with the grouping of the items in two factors (α = .97), one main factor called Global Institutional Management (α = .96; 38.6% variance explained) and a second factor called Value/Attitudinal (α=.93: 24.4 % of variance explained).

More recently in the United States, Aziz (2018) conducted research with a mixed approach (qualitative and quantitative) to identify the competencies and strategies most used by university leaders at times of planned change in HEIs.

Among the various theoretical models on which it was based, the model of competencies and skills divided into three main categories stands out: personal leadership (leading oneself), leadership for others (leading others, social competencies) and leadership for the organisation (leading the organisation). To this end, he designed a scale grouping items and competencies for these three categories and conducted open interviews with senior managers in order to specify a prior categorisation and organisation of the most salient competencies and strategies obtained first-hand from HEI leaders who were undergoing or had undergone a process of change.

In the author's measurement instrument, the skills were grouped into three groups of general competencies, those of individual leadership were classified into the group of personal competencies, consisting of presence, resilience and personal learning; those of leadership towards others into social competencies, namely emotional connection/creating a safe space, search for meaning and collective learning; and finally those of organisational leadership grouped tactical and cognitive competencies, such as coalition building and networking, project management, resource seeking, culture building.

More specifically, Aziz (2018) based his study on a comprehensive compilation of previous theoretical and empirical evidence, especially on Scott, Coates and Anderson's (2008) model of competencies in HEIs; and proposed the distribution of competencies into the three categories of leadership: personal, social and organisational.

In Canada, Michael Fullan has been one of the most renowned researchers studying leadership in higher education institutions, with special emphasis on leadership in times of change not only in HEIs, but in conjunction with the challenges of organisations worldwide. Fullan has developed his work at the University of Toronto, where he is professor emeritus, and was dean from 1988-2003, leading two processes of organisational transformation in that institution. He currently works as an advisor, consultant, lecturer, and writer in the area of Leadership and Deep Learning in HEIs.

This author puts forward at least 5 **elements that are key to organisational change in HEIs,** these are:

Loving your employees

Connecting people with purpose

Capacity to create constantly

Learning is the work

Transparent rules

Learning systems

To this end, **he mentions that the characteristics of leadership in partner HEIs should be conviction and connection.** Within conviction he classifie

1. Ability to provide a complete vision

2. Ability to manage and lead change

3. Sense of reality, which is the ability to grasp what is really happening to people

4. Ability to show passion, conviction, belief, and authenticity

5. A commitment to continuous learning

AND WITHIN **THE CHARACTERISTICS OF CONNECTION,** HE INTEGRATES:

6. Self-awareness

7. Effective communication

8. People development, putting people first

9. Ability to revitalise the values of the organisation.

Today's university leaders face challenges never seen before, such as the consequences of the Covid-19 pandemic, which is still very much with us at the time of this research.

Seltzer (2020) calls on all university leaders to adapt quickly to current changes and challenges, not only those related to the pandemic, but also to others present such as the racist structure of society, the weakening of leadership at a global level, social, economic and technological inequality and inequities, and other challenges such as climate change. All these crises or challenges have long-term consequences that are still unknown, affect and will continue to affect people's lives and physical and mental health and affect and will affect Higher Education Institutions and society. Therefore, HEIs must adapt in a very short time, and it is their leaders who are called upon to act radically in the face of changes. Seltzer (2020) comments that leaders should not only be reactive, but visionaries for a better world. To this end, he interviews more than a dozen senior university executives in the United States and Canada, including Santa Ono, president of the University of British Columbia.

As a result of all the reflections, he recommends that in order to ensure the success of good leadership in the midst of today's challenges, the following skills should be highlighted and put into practice: effective communication, which should be open, transparent and warm, self-criticism, building a strong organisational culture, resilience with an inspiring problem-solving mindset, entrepreneurial and innovative attitude, empathy, making others matter in decision making, thinking about people, building trust, patience, courage, bravery, honour and shared governance, ability to diversify skills, motivating change, forward-looking vision for the future, constant learning, diversifying scorecards, planning and strategic skills, leadership, finding perspective, demonstrating these competencies and taking concrete actions.

In view of this, he strongly recommends that the top management of universities and colleges adopt a servant leadership style, in which people are placed as a priority and not personal ambitions; it is a leadership that balances the needs of people, society and the organisation, trying to obtain the common good for all, and not so much to achieve prestige and exclusivity as the primary drives of the institution. This type of leadership must promote equal opportunities and reduce inequalities in the organisation. It should also be an agent of change to achieve social, environmental, and economic justice in society. He recommends leadership for service, to be an agent of change to achieve social justice.

2.3 Competencies of senior management in HEIs in Mexico

Elizondo Montemayor (2011) conducted a theoretical study to identify in the literature the main competencies that academic heads of Mexican HEIs should have. He mentions that there is very little information on the functions, responsibilities, skills and competencies that such heads should have and that there is very little evidence of this knowledge in HEIs in Mexico. The author defines an academic head as one who stands between the faculty and the top management of the university. The results of his analysis were based on the three-circular model of competencies, proposing the incorporation of five major categories of competencies in the academic heads of Mexican universities:

1. Institutional vision and mission
2. Academic quality
3. Management of students
4. management of professors
5. Management of research - educational innovation and scientific research

One of the limitations of this study is that it only focuses on academic heads exclusively and not on all HEI managers and, furthermore, it has a theoretical and not an empirical approach.

Similarly, Zerdeño et al. (2014) argue that HEIs in Mexico have developed the concept of competencies in curricular teacher training, leaving aside the managerial functions of the organisation, which is why they carried out an empirical study, the aim of which was to identify the key managerial competencies for a manager's profile in the field of managing the main processes of an institution, as a starting point for the further development of research in the country's technological universities. The results revealed that the most valued competencies in Mexican HEIs are: a) in the strategic area: resource management, b) within the intra-strategic ones: teamwork and leadership, and finally c) in the personal effectiveness area: integrity.

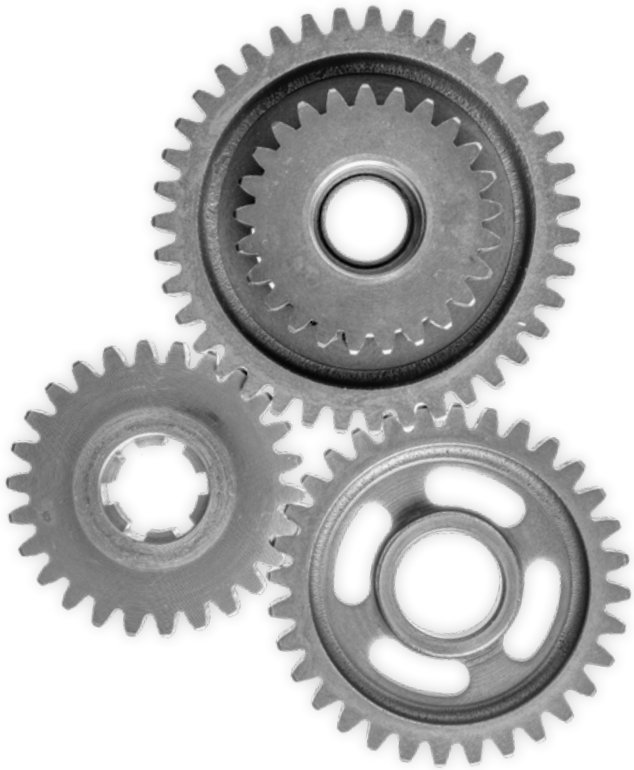
Therefore, there is a need to develop empirical studies and measures of competencies of top university managers in Mexican universities, while taking into account the differences according to the classification of HEIs into classical and technological ones. This is one of the objectives of this research.

3. METHODOLOGY

For the present study, **we applied a mixed methods approach,** combining qualitative and quantitative perspectives. The intermingling of these in different stages allowed us to provide greater depth to the results obtained.

3.1

Research objectives and hypothesis



The general objective of this research is to establish a map of strategic competencies that should be sought in the management teams of HEIs in Mexico, integrating the active participation of the people involved and based upon different studies, experiences, and good practices.

To this end, the design and adjustment of a scale of competencies for managers of Mexican HEIs is proposed, by integrating the competencies obtained in the focus group based on the IGLU academic model and management competencies of leaders (Jiménez, 2017) as well as the previous study with those of Bonnefoy et al.'s (2014) scale of competencies.

FROM THE RESULTS OF THE FOCUS GROUP CONDUCTED IN THE PREVIOUS STAGE, PEOPLE MENTIONED THE FOLLOWING RELEVANT COMPETENCIES LINKED TO **THE FIVE AREAS OF MANAGEMENT TRAINING INTEGRATED IN THE ACADEMIC MODEL OF THE IGLU COURSE:**

STRATEGIC MANAGEMENT
assertive communication, decision making, vision for innovation, negotiation, teamwork and managing change

RESOURCE MANAGEMENT
leadership, teamwork and negotiation

ACADEMIC MANAGEMENT
academic leadership, communication, systems and technology management

PROJECT MANAGEMENT
entrepreneurship, shared vision and ethical conduct

SELF-MANAGEMENT
leadership, communication, negotiation and teamwork.

To incorporate these competencies found in the focus group into the set of measures of senior HEI managers' competencies, 11 new items were drafted and incorporated into the competency instrument developed by Bonnefoy et al. (2004). In total, the new scale used had 40 items that conceptually and operationally define the managerial, attitudinal and personal competencies of HEI top managers that have also been supported by the literature (Aziz, 2018).

Therefore, as a research hypothesis, it is proposed that management competencies for the success of top management in HEIs are defined as the interrelation of skills, knowledge, attitudes and leadership and management experience (Carbone et al. 2016; Incode, 2012), integrated and verifiable in an instrument that has been adapted for the Mexican population. To this end, items related to attitudes towards service, resilience, values, emotional intelligence, negotiation knowledge and skills, knowledge of the organisation's structure and systems, integration into work teams, motivation, communication, knowledge and skills for change management, project management skills, and academic and research experience as part of academic leadership have been incorporated (Ehrenstorfer et al. 2015).

3.2
Design and data analysis

The type of research is non-experimental ex post facto with a psychometric and descriptive design (Kerlinger and Lee, 2002), since the objective is to define and describe competencies, as well as to design and adjust an operational definition and instrument to measure the competencies of senior managers in HEIs. A descriptive analysis was carried out to characterise the sample and to find out the levels of competencies of the sample. Additionally, for descriptive purposes, comparative Student's t-tests for independent samples were carried out to determine possible differences in competencies according to gender, the type of institution in the Mexican higher education system, and the location of the Mexican HEIs.

For the psychometric analysis of the new adapted instrument, an Exploratory Factor Analysis (EFA) was performed, with an unweighted least squares extraction method, due to the nature of the data, in which not all of them meet the criteria of normality. The rotation method was Varimax because it theoretically assumes independent behaviour among the components of the resulting competencies (Abad, Olea, Ponsoda, & García, 2011). For the calculation of reliability, Cronbach's Alpha internal consistency coefficient was determined. By means of these procedures, the objective of determining the main components of the competency instrument is ensured, obtaining as a result the inventory of competencies of senior managers in Mexican HEIs. The statistical software used was SPSS.

Additionally, a content analysis was conducted for an open-ended question in the measurement booklet, specifically, the question related to ***"Do you think there are other important challenges that leaders and managers of Mexican universities should be able to handle?"***

For this question, a qualitative analysis was carried out using the "open coding" method, i.e., the contents of each of the participants' responses (N=981) were analysed and grouped into descriptive meta-categories according to the similar meanings of the categories found.

Additionally, once grouped into categories of meanings, a frequency analysis was carried out to determine the most salient of all the challenges presented.

Population and sample

The population consisted of all Mexican Higher Education Institutions (HEIs), public, private, university and technological, located in both metropolitan and rural areas. The sampling had two main stages, the first one for the selection of the institutions and the second one for the selection of the participants of the final sample of senior managers of HEIs.

1ª

For the first stage, a **stratified random sampling** was carried out, in which

N=22 INSTITUTIONS were randomly selected from a universe of **74 INSTITUTIONS,**

which were **divided according to the type** of HEI classification stratu:

- University **(N= 18)**
- or technological HEI **(N= 4)**

2ª

In the second stage, in each selected institution, **participants were selected by non-random purposive sampling,**

the criterion being that they held a senior management position in the HEI they represented at the time the inventory was applied.

In each of the institutions, permission was requested by means of a letter addressed to the Rector of each institution.

The total sample consisted of N = 981 persons in senior management positions in Mexican Higher Education Institutions (HEIs), of which n= 444 are women (45.3%), n= 536 are men (54.6%), and only one person identified himself as being of a gender other than the two previous two (other gender, n=1). A more detailed characterisation of the sample is given in the results section.

3.3
Instruments

The instrument considered the instructions and basic ethical considerations of confidentiality, the questionnaire on competencies of senior HEI managers, questions related to current challenges for senior HEI managers, and those related to socio-demographic information of the sample,

- Namely gender
- Position in the institution
- Location of the HEI (metropolitan or rural area)
- Type of HEI (public or private)
- Classification of the HEI (university/technological HEI)
- Position held in the HEI
- Level of education
- Area of work in the HEI

In order to obtain the competency assessment scale, a scale is adapted and developed by selecting items from the Bonnefoy et al. (2004) instrument for top management competencies in HEIs, which has excellent previous psychometric indicators (α =.97, two factors explaining 63% of the variance of the construct), together with the integration of the competencies and behavioural indicators from the results of the focus group carried out in the first phase of the research, together with competency indicators from the research carried out by Aziz (2018).

This instrument measures competencies as an integration of management skills, leadership, attitudes and knowledge applied to the managerial function (Aziz, 2018; Bonnefoy et al. 2004; Carbone et al. 2016; Ehrenstorfer et al. 2015). The instrument developed and adapted for the present research has N=40 items in total. The instructions indicate the possibility to choose and evaluate the level of importance of each of the competencies as part of their function, on a 10-point Likert-type response scale from 1_no importance to 10_maximum importance given to the competency.

3.4
Procedure

In the first stage
A review of the theoretical and empirical literature was carried out to determine the competencies of senior HEI managers and their respective measures.

In the second stage
The final HEI Management Competencies assessment scale was designed in conjunction with the results of the competencies found in the previous focus group study and the respective literature review.

In the third stage
The sampling procedure was carried out, involving the selection of the participating Mexican HEIs and the final sample of senior managers in each HEI.

In the fourth stage
The self-administered questionnaires were applied in their entirety in online format.

In the fifth stage
the results were obtained, and the data analysed according to the research objectives.

In the sixth stage
Se obtuvieron los resultados y analizaron los datos según los objetivos de la investigación y en la sexta etapa se elaboraron las discusiones y conclusiones acerca de las principales competencias obtenidas de las IES mexicanas.

4.

ANALYSIS AND INTERPRETATION OF RESULTS

For the presentation of the results, **we have identified four lines of analysis** that may reflect contributions of interest for the fulfilment of the objective of the study: general results, psychometric results, competencies and future challenges. In addition, a review of the competencies already acquired is presented.

4.1 General descriptive results

These results integrate the demographic variables considered, the total sample consisted of N = 981 people with senior management positions in Mexican Higher Education Institutions (HEIs), of which n= 444 corresponded to women (45.3%), n= 536 corresponded to men (54.6%), and only one person identified themselves as being of a different sex from the two previous ones (other sex, n=1).

According to the location of the HEI, n = 673 people indicated a metropolitan area (68.6%), n = 185 a rural area (18.9%) and n = 123 a location other than the two previous ones (12.5%).

With respect to type of HEI, n = 827 people reported belonging to a public university (88.9%) and n= 109 people to private institutions (11.1%).

Regarding the institution's classification, that is, whether a University or University/Institute of Technology, n = 702 indicated belonging to Universities (71.6%) and n = 279 did so for University/Technological HEI (28.4%).

Regarding the position held in the HEI, were classified as follows, see Table 1:

Table 1. Frequency and percentages of position held.

	POSITION HELD	FREQUENCY	PERCENTAGE	VALID PERCENTAGE	CUMULATIVE PERCENTAGE
1.	Rector	16	1,6	16	1,6
2.	Vice Rector	28	2,9	2,9	4,5
3.	Dean	31	3,2	3,2	7,6
4.	Departamento Director	503	51,3	51,3	58,9
5.	Other	403	41,1	41,1	100,0
	Total	**981**	**100,0**	**100,0**	

As can be seen, the majority are departmental directors.

N= 16 Rector(s), n= 28 Vice Rector(s) and n= 31 Dean(s) participated.

Regarding the educational level of the participants, it can be seen in Table 2 that the majority, 50.4%, have a master's degree, followed by bachelor's degree/engineering degree (26%) and 21.1% report having a doctorate degree.

Table 2. Frequency and percentages of education level

EDUCATION LEVEL		FREQUENCY	PERCENTAGE	VALID PERCENTAGE	CUMULATIVE PERCENTAGE
1.	Doctorate degree	207	21,1	21,1	21,1
2.	Master´s degree	494	50,4	50,4	71,5
3.	Specialization	25	2,5	25,5	74,0
4.	Bachelor/ Engineering degree	255	26,0	26,0	100,0
	Total	**981**	**100,0**	**100,0**	

Regarding the area of work in which the person works in the HEI, the results are very varied, and the same person may work in one or more areas. In summary, the results are shown in Table 3.

The top three areas in which they are most engaged are: Strategic planning (41.3%), Leadership and management of learning and strategic teaching development (36.6%) and Leadership and change management (33.1%).

Table 3. Participants' main areas of work.

	AREAS OF WORK	FREQUENCY
1.	Strategic planning	**405**
2.	Resources	253
3.	Human Resources Management	264
4.	Performance Management	196
5.	Leadership and change management	**325**
6.	Management of the environment, including assets and information technology	155
7.	Quality Management	286
8.	Leadership and management of learning and strategic development of teaching	**359**
9.	Leaderchip and research Management and strategic development	197
10.	Network management and interaction with the university community	225
11.	Human Resources Management	212
12.	Performance Management	175
13.	Leadership and change Management	210
14.	Management of the environment, including assets and information technology	189
15.	Quality Management	207

4.2 Psychometric results

The instrument obtained excellent psychometric indicators and is significantly valid and reliable. The reliability of the total instrument (40 items) tested by means of Cronbach's alpha coefficient is α = .966, which shows a high internal consistency.

With regards to validity, as a statistical prerequisite, Bartlett's test of sphericity (p<0.0001; gl =780) and KMO (0.974) were calculated, both indicating that the sample is suitable for Exploratory Factor Analysis (EFA).

The results of the Exploratory Factor Analysis indicate that the instrument defines competencies by means of three factors with 55.5% of the variance explained by the concept (eigenvalue or root = 1.9).

The first factor (FI) is composed of items 15, 16, 17, 20, 25, 26, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39 and 40, and together they explain 23.3% of the explained variance of the scale to define the construct.

The items of the first factor refer to aspects related to leadership, attitudes and values towards others, in favour of harmony and a good group climate, such as:

"tries to maintain a healthy work climate, offering a space to listen to the concerns, needs and suggestions of the collaborators" **(item 39, factorial weight .748);**

"is able to respect those who do not share his/her values and ideas" **(item 36, factorial weight .748);**

"shows constructive and assertive attitudes towards others, in favour of harmony and a good group climate" **(item 36, factorial weight .748).**

(item 39, factorial weight .748);
"is able to respect those who do not share their values and ideas" **(item 36, factorial weight .748).**

"shows constructive and assertive attitudes in their interpersonal relationships within the university" **(item 33, factorial weight .697).**

Table 4 details the reliability and weights of the exploratory factor analysis with varimax rotation, a method used for the weighted minimum extraction of the HEI top management competencies scale.

Table 4. Factorial weight of the items that saturate in the first factor.

SCALE ITEMS		FI α= .96	FI α= .94	FI α= .84
1.	Plans based on a solid understanding of the University's global mission, policies, and practices.		.624	
2.	Coordinates planning efforts with other university areas.		,566	
3.	Identifies possible problems of the institution and their repercussion to the components of the area under his/her charge.		,582	
4.	Encourages the change of action plans or strategies when they are not functional to the organization.		,646	
5.	Remains alert to changes in the environment, detecting needs for restructuring, innovation or improvement that adds value to the unit		,641	
6.	Clarifies roles and functions of the members of the unit or organization as appropriate.		,639	
7.	Communicates clearly and precisely, to the members of their unit, issues related to institutional progress, decision-making or specific tasks, when appropriate or requested.		,603	
8.	Establishes and communicates quality standards that allow effective feedback on the performance of the members of the unit.		,648	
9.	Directs the group towards defined objectives and goals, granting time and resources necessary for their achievement		,707	

Nota. FI: Liderazgo, actitudes y valores; **FII:** Habilidades de gestión; **FIII:** Conocimiento y experiencia amplia.

SCALE ITEMS		FI α= .96	FI α= .94	FI α= .84
10.	Designs control mechanisms, monitoring the performance and productivity of the personnel under their charge, evaluating the improvement actions around the results obtained		,610	
11.	Demonstrates the ability to persuade or influence the personnel under their charge regarding the defined objectives		,576	
12.	Visualizes the potential and abilities of the staff to achieve the goals of the organization		,593	
13.	Objectively analyzes problems, considering their implications and alternatives before making decisions		,605	
14.	Visualizes, evaluates, and decides the most convenient alternatives to solve the problems they face		,553	
15.	Thinks clearly and maintains productivity in moments of pressure, without losing focus of the problem	,517		
16.	Demonstrates creativity and flexibility in decision-making and in addressing problems	,558		
17.	Reflectively analyzes the development of their work	,554		
18.	Anticipates problems and changes in the environment, planning and developing responses with proactive innovation		,523	
19.	Has the ability to evaluate the information received from the different levels and actors of the organization and to decide courses of action in this regard.		,504	

Nota. FI: Liderazgo, actitudes y valores; **FII:** Habilidades de gestión; **FIII:** Conocimiento y experiencia amplia.

SCALE ITEMS		FI α= .96	FI α= .94	FI α= .84
20.	Transmits enthusiasm and confidence, stimulating the challenge to discover and undertake new projects or possibilities	,615		
21.	Has extensive knowledge of the internal and external reality of the context and environment of the organization			.442
22.	Has a good command of the language and knowledge of other languages that facilitate communication with people from other cultures and international education institutions			,530
23.	Has negotiation skills and knowledge			,580
24.	Has extensive knowledge of the structure, functions and organization of the higher education system			,629
25.	Integrates work teams, cooperates and delegates functions	,604		
26.	Motivates team work to achieve the results in a satisfactory way	,660		
27.	Has extensive knowledge of information and communication technologies.			,543
28.	Has extensive academic and research experience			,655
29.	Has project management skills			,703

Nota. FI: Liderazgo, actitudes y valores; **FII:** Habilidades de gestión; **FIII:** Conocimiento y experiencia amplia.

SCALE ITEMS		FI α= .96	FI α= .94	FI α= .84
30.	Maintains a balance between the moral and ethical values of the organization and their personal vision about them	,696		
31.	Acts in accordance with the norms and ethical standards of the organization	,645		
32.	Shows interest and understands the problems that may be affecting their collaborators and / or peers	,672		
33.	Shows constructive and assertive attitude in their interpersonal relationships within the university	,697		
34.	Involves others in decisions that may affect the organizational climate and culture	.413		
35.	Supports and promotes the personal development of the members of the units under his charge	,566		
36.	Respects those who do not share his values and ideas	,748		
37.	Has an openness towards diversity, inclusion and adaptability	,756		
38.	Encourages members of the organization to express their disagreements and / or criticisms directly and constructively	,635		
39.	Seeks to maintain a healthy work environment, offering a space to listen to concerns, needs and suggestions of collaborators.	,748		
40.	Shows resilience and emotional intelligence to manage change	,634		

Note. FI: Leadership, attitudes and values; **FII:** Management skills; **FIII:** Broad knowledge and experience.

The second factor (FII) is composed of items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 18 and 19, and between them they explain 21.36% of the variance of the competencies instrument.

Theoretically, this factor refers to the management and planning skills of HEI leaders, as can be seen in the items of this factor, for example:

"Directs the group towards defined objectives and goals, providing the time and resources necessary for their achievement" **(item 9, factorial weight .707);**

"encourages modification of action plans or strategies when these are not functional to the organisation" **(item 4, factor weight .646)**

and innovation or improvement that adds value to the unit" **(item 5, factor weight .641)**

Table 4 shows the rest of the items that saturate in factor II.

And finally for the factor analysis of the scale, the third factor (FIII) was represented by items 21, 22, 23, 24, 27, 28, 29, which significantly explain 10.8% of the variance explained, with a high reliability of α = .842.

The most salient items of this third factor are:

"Has broad knowledge of the internal and external reality of the context and environment of the organisation" **(item 21);**

"Has project management skills" **(item 29);**

"Has broad academic and research experience " **(item 28);**

and "Has a good command of the language and knowledge of the internal and external reality of the context and environment of the organisation" **(item 22).**

The content of these representative items shows that this factor is related to the experience and knowledge of managers in different areas of HEIs, academia, research, project management, knowledge of the internal and external reality of the organisation. For more information on this factor, see Table 4.

4.3

Descriptive results of the competencies

The resulting mean for the sample of participants from the Mexican HEIs is described below for each of the competency factors found.

For leadership, attitudes and values the mean is high (***M*** = 177.38, ***SD*** = 13.01) within a possible range of minimum = 21 and maximum = 187. This means that managers value it highly, they consider leadership competence, people-oriented attitudes and values, empathy, good work climate, ethics and respect for diversity to be very important.

For management, planning and innovation skills, the mean is also high (***M*** = 162.93, ***SD*** = 15.36), within a range of minimum = 19 and maximum = 176. This reflects that managers also attach high importance to competencies that bring together management skills, which facilitate systematisation, planning and innovation tasks in an optimal and efficient way.

And for the third competency factor, ***broad knowledge and experience,*** managers have similarly given high importance (***M*** = 67.34, ***SD*** = 7.8), within a range of minimum = 7 and maximum = 77. Table 5 shows the summary values of the descriptive values of the three factors.

Table 5. Descriptive statistics for each of the competency categories

COMPETENCIES BY FACTOR		MIN	MAX	AVERAGE	STANDARD DEVIATION
1.	Leadership, attitudes and values directed to people	21	187	177.38	13.01
2.	Management, planning and innovation skills	19	176	162.93	15.36
3.	Broad knowledge and experience	7	97	67.34	7.8

Differences in the assessment of competencies with respect to socio-demographic variables

Student's t-tests for differences in means for independent samples were used to calculate significant differences

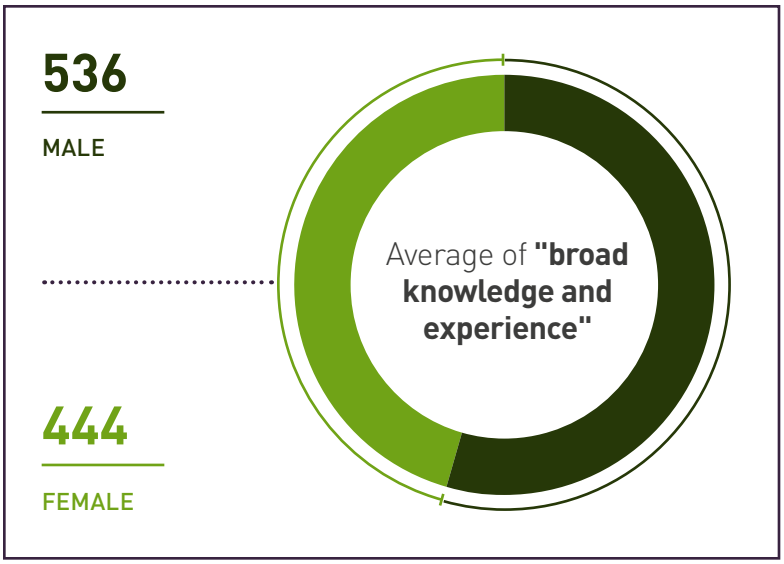
We inquired about the possible difference in the valuation of the competencies **according to gender** and did find a significant difference in the **"broad knowledge and experience"** competency in the sense that men consider this competence more important (M = 67.86) than women (M = 66.71) in a significant way (t = 2.27, gl = 978, p < .023).

In the other two competencies, the managers obtained an assessment that did not show significant differences by gender. In other words, the assessment of the importance of the competency and the competency "leadership, attitudes and values" do not differ according to the gender of the person in a senior management position in HEIs (see Table 6)..

Table 6. Difference in the competencies' averages regarding gender.

DIFFERENCE IN THE COMPETENCIES' AVERAGES REGARDING GENDER		GENDER	N	AVERAGE	STANDARD DEVIATION	T
1.	Leadership, Attitudes and Values	**Female**	444	178,1	12,5	P>.05
		Male	536	176,7	13,4	
2.	Management, Planning and Innovation Skills	**Female**	444	163,8	14,2	P>.05
		Male	536	162,2	16,2	
3.	Knowledge and experience	**Female**	444	66,7	8,3	**2.27**
		Male	536	67,8	7,3	**P<.023**

Figure 1. Knowledge and experience by type of institution.

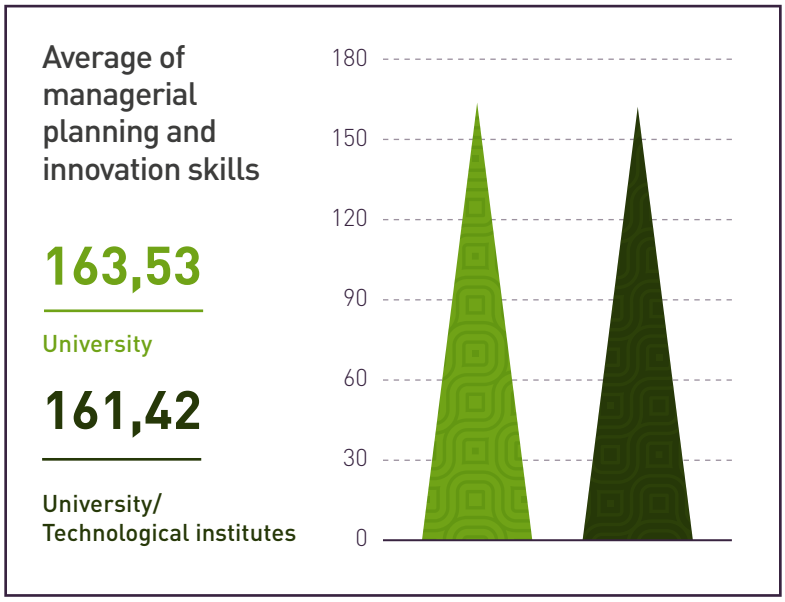


Significant difference in the assessment of the competence **"broad knowledge and experience"** with respect to gender.

N = 981
PERSONS

With respect to the type of institution:
there are differences with respect to the type of institution, university or technological institutes, in two of the competency categories. Managers at universities consider "management, planning and innovation skills" to be significantly more important (M = 163.57, SD = 14.1) than those at technological institutes (M = 161.42, SD = 18.09) (t = 3.08, gl = 979, p < .002).

Figure 2. Planning and innovation management skills by type of institution

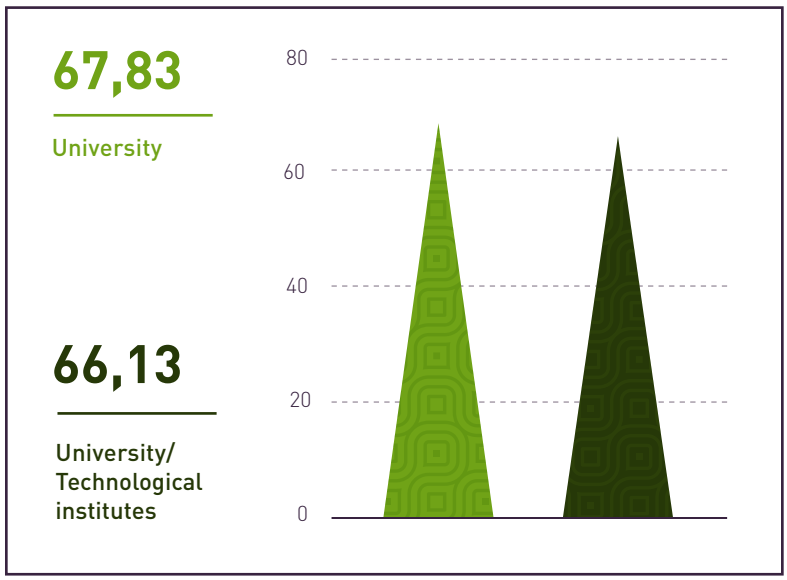


There is a significant difference in the assessment of the competence **"management, planning and innovation skills"** with respect to the type of institution.

N = 981
PEOPLE IN ALL

Similarly, for the **"broad knowledge and experience" competency,** university managers (M = 67.83, SD = 7.5) rated it significantly more important than managers of technological institutes (M = 66.13, SD = 8.4; t= 3.08, gl = 979, p < .002).

Figure 3. Knowledge and experience related to the location of the institution



There is a significant difference in the assessment of the competence **"broad knowledge and experience"** with respect to the type of institution.

N = 981
PERSONS

Table 7. Difference in the competencies' averages regarding the type of participating institution

DIFFERENCE IN THE COMPETENCIES' AVERAGES REGARDING THE TYPE OF PARTICIPATING INSTITUTION		TYPE OF INSTITUTION	N	AVERAGE	STANDARD DEVIATION	T
1.	Leadership, attitudes and values	**University**	702	177,7	12,5	P<.05
		Technological Institute	279	176,5	14.8	
2.	Planning and innovation management skills	**University**	702	163,5	14.1	3.08
		Technological Institute	279	161,4	18.1	P<.002
3.	Knowledge and experience	**University**	702	67,8	7.5	3.08
		Technological Institute	279	66.1	8.4	P<.002

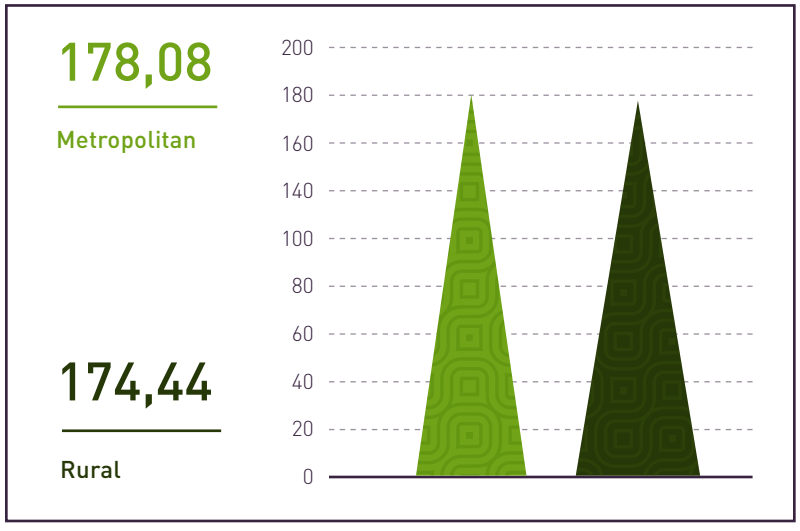
With respect to the location of the institution: metropolitan or rural, significant differences were obtained with respect to the evaluation of the competences. Senior managers belonging to universities located in metropolitan areas rated the three factors of the competencies found with greater importance and in a significant manner.

With respect to the "leadership, attitudes and values" competency, those working in institutions located in metropolitan areas **(M = 178.08, SD = 11.06)** obtained higher scores than those working in institutions in rural areas **(M =174.44, SD = 19.21; t = 3.31, gl = 856, p < .001)**. See

Table 8. Diferencia de medias de las competencias con respecto a la ubicación de las IES

DIFFERENCE IN THE COMPETENCIES' AVERAGES REGARDING THE TYPE OF PARTICIPATING INSTITUTION		TYPE OF INSTITUTION	N	AVERAGE	STANDARD DEVIATION	T
1.	Leadership, attitudes and values	**Metropolitan**	673	178.1	11.1	3.31
		Rural	185	174.4	19.2	P<.001
2.	Planning and innovation management skills	**Metropolitan**	673	163,5	14.1	3.03
		Rural	185	159.6	20.1	P<.003
3.	Knowledge and experience	**Metropolitan**	673	67.8	7.2	2.68
		Rural	185	66.1	9.3	P<.007

Figure 4. Leadership, Attitudes and Values by Region of the Institution

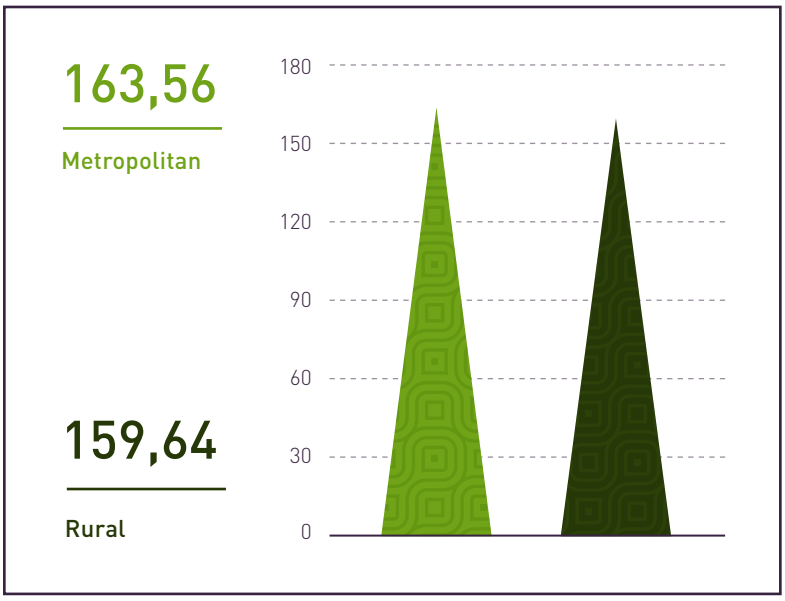


There is a significant difference in the assessment of the competency **"leadership, attitudes and values"** with respect to the location of the institution.

N = 981
PEOPLE

For factor II, management, planning and innovation skills, managers from institutions in the metropolitan areas rated it as more important than managers in rural areas **(t= 3.03, gl = 856, p < .003)**. For averages see Table.

Figure 5. Management, Planning and Innovation Skills by Region

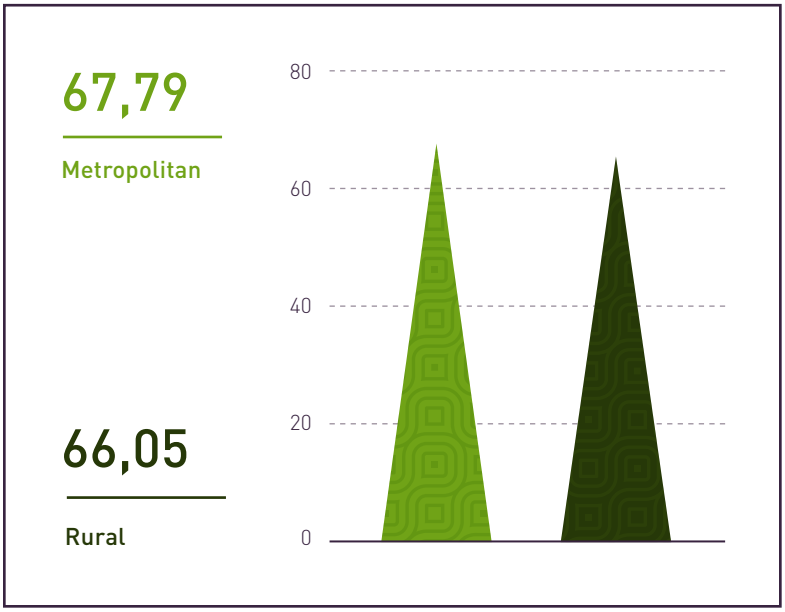


Significant difference in the assessment of the competence **"Management, planning and innovation skills"** with respect to the location of the institution.

N = 981
PEOPLE

And finally, for factor III, "broad knowledge and experience", managers from institutions in the metropolitan areas rated it as more important than managers in rural areas **(t= 2.68, gl = 856, p < .007)**. For averages see Table.

Figure 6. Academic knowledge and experience based on region



Significant difference in the assessment of the competency **"academic, research and organisational knowledge and experience"** with respect to the location of the institution.

N = 981
PEOPLE

4.4

Descriptive results of the biggest challenges facing leaders

For the analysis of this section, we consider the challenges faced by leaders according to degree of importance, though all the challenges obtained very high values, i.e., all were evaluated from very high importance to maximum importance. In this way, senior managers consider each of the tasks facing a leader as a great challenge, there were no differences between one and the other, all were evaluated with the highest importance. Illustratively, the three with the highest scores are mentioned below:

The challenge "Maintaining quality" was the highest rated, followed by the challenge "Leading the development of learning and teaching" and in third place, the challenge "Good governance". The specific results of all the averages can be seen in Table 9.

Table 9. Average of each of the challenges faced by the leaders of Mexican HEIs

		MIN	MAX	AVERAGE	TYPICAL DEVIATION
1.	Develop new leaders	1	11	10,42	1,197
2.	Lead the growth of student recruitment	1	11	10,03	1,456
3.	Manage the reputation of the University	1	11	10,33	1,280
4.	Manage finances	1	11	10,16	1,580
5.	Lead technology development	1	11	10,34	1,288

		MIN	MAX	AVERAGE	TYPICAL DEVIATION
6.	Have good governance	1	11	10,48	1,163
7.	Select new staff	1	11	9,96	1,754
8.	Manage university assets	1	11	10,06	1,495
9.	Maintain quality	1	11	10,62	1,033
10.	Make quick decisions	1	11	9,96	1,456
11.	Support diversity in leadership development	1	11	10,31	1,244
12.	Work with difficult teachers	1	11	9,44	1,974
13.	Work with the entire university community	1	11	10,40	1,216
14.	Lead research development	1	11	10,24	1,375
15.	Lead the development of learning and teaching	1	11	10,49	1,227

In addition, they were asked with an open-ended question whether there are other challenges they be able to face, specifically: **Do you think there are other important challenges that leaders and managers of Mexican universities should be able to handle?**

Through content analysis, meanings were classified into meta-categories and response categories; and a frequency analysis was conducted to determine the most salient meanings and challenges. The results are summarised in Table 10.

Table 10. Meta-categories of the challenges to be faced by senior managers in current times, and their frequency.

	NEW CHALLENGES DISTRIBUTED IN CONCEPTUAL META CATEGORIES	FREQUENCY OF EACH ONE
1.	Socio-emotional development (soft skills)	82
2.	Management of the pandemic and health crisis	53
3.	Search for other sources of financing other than national budgets	52
4.	Defense of ethics and values at all levels	47
5.	Leading for Inclusion and Equality	37
6.	Internationalization	11
7.	Reorient the educational offer based on the current needs of society, innovation	11
8.	The politicization of universities	10

1ª

The first meta-category is socio-emotional development, and in it are classified the categories of emotional intelligence, empathy management, resilience, balance, socio-affective skills, stress management, work-family balance and mental health and the approach to more human variables. For example, "Be empathetic with ALL members of the academic community and workforce" (participant 58, male) and "look more at the being of human beings" (participant 906, female).

2ª

The second meta-category is pandemic and health crisis management. The categories are directly related to pandemic management, risk management, change management, opportunity management and time management related to new situations within the context of the pandemic. A typical case of this meta-category is participant 97 (male): "health crisis management according to the current pandemic situation".

3ª

The third meta-category is the search for funding sources other than national budgets. The categories that describe this are the seeking of other sources of funding per se, working with productive sectors and promoting income-generating projects. Entrepreneurship is included here, although to a lesser extent. Example: "Finding other sources of funding, because with the national budget cuts, some HEIs have had to suspend important programmes for the professional development and comprehensive training of students" (participant 298, female).

4ª

The fourth meta-category is upholding ethics and values at all levels. It is defined according to the categories of values themselves, ethics, trust, honesty, loyalty, sustainability, transparency, peace and non-violence. An example of this meta-category is the following statement of participant 951 (male): "Uphold the ethical principle of full transparency".

5ª

The fifth meta-category is leading for inclusion and equality and refers to the conceptual categories of being inclusive of gender equality, socio-economic resources, inclusion of students from economically disadvantaged social classes, being tolerant of diversity, interculturalism, human rights, tolerance, justice and even including consideration of climate change. For example: "Leading for inclusion" (participant 919, female).

4.5
Analysis of competencies acquired throughout life

Results related to the question: ***Which of the following competencies have you developed?*** The answer options are: 1) through training, 2) without training, 3) not developed.

The results of the frequencies for each of the competency options are shown in table 11. The results with the highest frequency for each are highlighted.

Table 11. Frecuencias de competencias adquiridas o no a lo largo de la vida mediante capacitación o sin ella.

COMPETENCES	I have developed this competence through training	I have developed this competence, but not through training	I still do not think I have developed this competence
1. Assertive communication	329 (33.5%)	608 (62%)	44 (4.5%)
2. Making decisions	254 (25,9%)	716 (73%)	11 (1.1%)
3. Innovative vision	287 (29.3%)	546 (55,7%)	148 (15,1%)
4. Teamwork	303 (30,9%)	585 (59,6%)	93 (9,5%)
5. Academic leadership	**402 (41%)**	565 (57,6%)	14 (1,4%)

COMPETENCES	I have developed this competence through training	I have developed this competence, but not through training	I still do not think I have developed this competence
6. Academic leadership	316 (32,2%)	481 (49%)	184 (18,8%)
7. Communication skills	342 (34,9%)	603 (61,5%)	36 (3,7%)
8. Systems and technology management	**44 (45,3%)**	294 (30%)	243 (24,8%)
9. Organizational leadership and management	**449 (45,8%)**	429 (43,7%)	103 (10,5%)
10. Entrepreneurship skills	314 (32%)	385 (39,2%)	**282 (28,7%)**
11. Develop a shared vision	244 (24,9%)	575 (58,6%)	162 (16,5%)
12. Motivate others	192 (19,6%)	**747 (76,1%)**	42 (4,3%)
13. Develop my digital literacy	359 (36,6%)	397 (40,5%)	225 (22,9%)
14. Develop political savvy	120 (12,2%)	468 (47,7%)	**393 (40,1%)**
15. Develop resilience	147 (15%)	**736 (75%)**	98 (10%)
16. Develop and lead teams	324 (33%)	615 (62,7%)	42 (4,3%)
17. Develop values and support ethical behavior	234 (23,9%)	**723 (73,7%)**	24 (2,4%)

COMPETENCES	I have developed this competence through training	I have developed this competence, but not through training	I still do not think I have developed this competence
18. Manage priorities and time	310 (31,6%)	593 (60,4%)	78 (8%)
19. Develop emotional intelligence	**348 (35,5%)**	553 (56,4%)	80 (8,2%)
20. Being able to conduct "difficult conversations"	166 (16,9%)	**655 (66,8%)**	160 (16,3%)
21. Develop communication skills	307 (31,3%)	620 (63,2%)	54 (5,5%)
22. Design and manage innovative projects	350 (35,7%)	349 (35,6%)	**282 (28,7%)**
23. Develop knowledge management skills	330 (33,6%)	452 (46,1%)	199 (20,3%)
24. Plan finances and marketing	322 (32,8%)	316 (32,2%)	**343 (35%)**
25. Manage diversity and equality in the workplace	328 (33,4%)	555 (56,6%)	98 (10%)
26. Manage personnel policies and performance management	320 (32,6%)	412 (42%)	249 (25,4%)
27. Lead the campus master planning	274 (27,9%)	323 (32,9%)	**384 (39,1%)**
28. Manage quality	**561 (57,2%)**	305 (31,1%)	115 (11,7%)
29. Manage sustainability	366 (37,3%)	340 (34,7%)	275 (28%)

5.

DISCUSSION AND **CONCLUSION**

A leadership towards inclusion and equality, internationalisation, adaptation of the educational offer to current needs, as well as in favour of democratisation and transcending possible situations of politicisation of university education is envisaged. These present undoubtedly palpable challenges for the entire higher education systems of countries.

To this end, an inventory of top management competencies in HEIs was adapted. As a result, a valid and reliable instrument was obtained, with excellent psychometric indicators to measure the competencies of successful top management in HEIs, especially in Mexican HEIs, the population of interest in this study.

For Mexican HEI managers, competencies are defined in terms of three conceptual factors or dimensions:

1. **Leadership, attitudes and values**
2. **Management, planning and innovation skills**
3. **Academic, research and organisational knowledge and experience**

The conceptualization of competencies in three dimensions is congruent with the classic definitions of the interrelation of skills, attitudes, knowledge and experience (Bush et al. 2017; Carbone et al. 2016; Incode, 2012). **However, the type of leadership and attitudes, as well as of skills and experience is what highlights and makes distinctive the competencies in this population.**

While all three dimensions of competences were highly rated across the sample, i.e. all participants gave high scores in all three dimensions, the first dimension related to leadership, attitudes and values is considered the most important for senior HEI leaders.

1ª

In particular, this first dimension refers to a type of leadership and attitudes related to service to others and empathy towards others, towards the work team, to understanding the problems that may be afflicting people, respect and promotion of values and other ideas, being flexible and open to diversity, resilience, emotional intelligence, constructive and assertive attitudes and a high appreciation of a good work climate. This type of leadership, which is linked to constructive attitudes, aimed at empathy and values as a principle for helping others, is what is defined in the literature as servant leadership (Gandolfi and Stone, 2018), which is also proposed by Seltzer (2020) as indispensable for successfully facing the current global demands and challenges, and especially those faced in current university contexts.

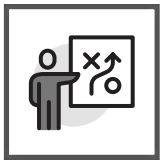
2ª

The second dimension, competencies related to "management, planning and innovation skills", were also highly valued and refer to the ability to effectively and efficiently lead and manage the organisation, with the new criteria of planning and innovation (Martínez et al. 2016), in the sense that top management must be able to differentiate leadership and management, as well as favourably execute the supreme ability to manage, plan, operate and administer the organisation, in a creative and innovative manner (Ascón et al. 2019). This range of competences belong to the most classic definitions and have been widely studied, not only in the educational context, but also in the business organisational context.

3ª

Similarly, the third dimension, "academic, research and organisational knowledge and experience", is highly valued by the top management of Mexican HEIs. This result is fully congruent with recent evidence in the context of HEIs, since the accumulation of knowledge is essential for the adequate application of skills, leadership, attitudes and service actions in the development and management process (Ascón et al. 2019; Bonnefoy et al. 2004); but also experience in academia, research and the internal dynamics of the organisation itself is of crucial importance, in fact, this same competency is found by Ehrenstorfer et al. (2015), and is defined as a competency for professional expertise, which includes precisely experience and knowledge. The following table summarises the main and most important top management competencies of HEIs that are desirable and highly valued by top management in Mexican HEIs today.

Table 12. Inventory of competencies of senior managers in Mexican HEIs.

Conceptual and operational dimensions of competencies results by Factors	Behavioral indicators of the competences
 **FACTOR 1** Leadership skills, attitudes and values towards service.	📌 Offers space for listening, needs and suggestions from others. 📌 Understands the problems that may be affecting their collaborators and / or peers. 📌 Has empathy 📌 Respects those who do not share their values and ideas. 📌 Balances between the moral and ethical values of the organization and their personal vision about them. 📌 Openness to diversity, inclusion and adaptability. 📌 Constructive and assertive attitude 📌 Resilience and emotional intelligence
 **FACTOR 2** Management, planning and innovation skills	📌 Directs towards defined objectives and goals 📌 Analyzes problems and decision making 📌 Establishes quality standards 📌 Designs control mechanisms, personnel monitoring 📌 Has a directive communication 📌 Plans proactively and innovatively 📌 Plans based on the mission of the university
 **FACTOR 3** Experience and knowledge of the organization	📌 Extensive academic and research experience 📌 Extensive knowledge of the structure and functions of the organization 📌 Negotiation knowledge and skills 📌 Ability to manage projects 📌 Knowledge of other languages that facilitate communication with other institutions

In an exploratory manner, differences were found in the evaluation of the competencies, according to some of the socio-demographic variables of the sample. For example, **male managers rated the competency dimension of academic, research and organisational knowledge and experience higher.**

LHEI managers in metropolitan settings rate all three dimensions of competences higher than managers in rural settings. The type of institution also made a difference, with those in universities rating management, planning and innovation skills competences higher than those in technological institutes. While these comparisons with descriptive intent are not directly part of the research objectives, the information may be useful in directing and adapting educational and training programmes in competencies for university top management, as well as understanding the different perceptions and dynamics of each of the groups involved, considering the contextual and cultural realities in which they find themselves.

Following a prospective approach, the main challenges envisaged by the top managers of Mexican HEIs today were investigated; as a finding of this study, it was found that the current challenges mentioned by the participants coincide with the main and most salient competencies that have been measured in the present research.

The biggest challenge is to develop leadership, attitudes and socio-emotional skills, in which empathy, resilience and emotional intelligence stand out, which coincides with the conceptualisation of the first competency factor measured. The current situation and challenges mean that senior managers are demanding the development of "soft" skills as a "strong" competence, of great impact and urgency. In the same vein, another pressing challenge is how to deal with the health and pandemic crisis, together with the need to find other sources of funding to carry out major HEI projects without diminishing the well-being of all HEI members.

At the same time, the importance given to strengthening ethical and institutional values is emphasised, highlighting respect for differences, multiculturalism and the reduction of inequalities.

We envision a leadership towards inclusion and equality, internationalisation, the adaptation of educational offerings to current needs, as well as democratizing and transcending possible situations of politicization of higher education. These are undoubtedly evident challenges throughout the higher education systems.

In conclusion, an inventory of effective competencies and challenges to be addressed within the top management of Mexican HEIs has been obtained as the product of the integration of the results of a previous study (focus group), the adaptation of other top management instruments from Latin American HEIs and the review of the literature.

Servant leadership and empathy, the attitude towards one's own and others' well-being is the main characteristic of successful competency valued by the top management of Mexican HEIs and is also seen as the main challenge to be faced and taken up. The focus is not only on facing the current major challenges in the context of the pandemic, but also on the urgency of knowing how best to address and manage them successfully.

The priority is to be leaders in service and empathy towards others, with a vision of effective change management and innovation, with the implementation of experience and the emphasis on knowledge as an added value and differentiator of success in the face of current demands and constant change.

Therefore, the ability to manage and strategize various elements such as: innovation, change management, human resource management, project management, among others aligned to the mission of the organisation, as well as the importance of putting experience into practice and having extensive knowledge for the adaptation and updating of teaching, research and fundamental projects to lead HEIs successfully is also highly valued.

One of the limitations of this study is the use of a non-probabilistic purposive sampling of the final sample of participants, as the participation of the top management of the organisations (rectors, vice-rectors) was low compared to the middle management of the HEIs, therefore, the generalisability of the results obtained should be interpreted with caution.

It is recommended that the study be replicated in other Mexican HEIs that were not initially selected. It is also necessary to carry out and extend the study to other Latin American countries and HEIs, in order to confirm the psychometric behaviour of the competency scales and also to find out what similarities and differences may exist in the behaviour and evaluations of top managers in different HEIs in the region.

In addition, it is recommended that training and educational plans be designed for these competencies and challenges resulting from this research, while considering the differences found based on socio-demographic variable and with appropriate adaptation to the environment, reality and culture of each institution.

References

1. Abad, F., Olea, J., Ponsoda, V., & García, C. (2011). ***Medición en ciencias sociales y de la salud.*** Madrid: Síntesis.

2. Ascón, V.J.E.; García, G.M. y Lajara, C.A. (2019): Teoría y práctica en el desarrollo de habilidades directivas: un acercamiento desde la perspectiva de las instituciones de educación superior. ***Revista Ecociencia, 6***, (4), 1-29.

3. Aziz, D. (2018). Competencies And Strategies Utilized By Higher Education Leaders During Planned Change. ***Wayne State University Dissertations***. 1914. https://digitalcommons.wayne.edu/oa_dissertations/1914

4. Beck, S. (2003): "Skill and competence management as a base of an integrated personnel development (IPD)". ***Journal of Universal Computer Science,9,*** (12), 1381-1387.

5. Bonnefoy, C., Cerda, G., Peine, S., Durán, M. y Ponce, Y. (2004). Gestión directiva universitaria, un instrumento para su evaluación. ***Revista de Psicología de la Universidad de Chile, 13*** (2), 63-82.

6. Boyatzis, R. E. (1982). ***The competent manager. A model for effective performance***. New York: John Wiley.

7. Bush, Rochon Ghilherme, Claudia Souza Passador, Gilberto Tadeu Shinyashiki (2017). The employees' perception at a Brazilian public university. ***Revista de Administraçao***, ***52***, 233-245.

8. Capaldo, G.; Iandoli, L.; Zollo, G. (2006): "A situationalist perspective to competency management". ***Human Resource Management, 45***, (3), 429-448.

9. Carbone, P.P., H.C. Tonet, J.R. Silva Bruno, K.I. Brandao e Silva (2016). ***Gestao par competencias***. Rio de Janeiro: Fondaçao Getulio Vargas

10. Cardy, L.R.; y Selvarajan, T.T. (2006): "Competencies: Alternative frameworks for competitive advantage". ***Business Horizons***, ***49***, 235-245.

11. Casani, F. & Rodriguez-Pomeda, J.(2012). Percepciones de altos directivos universitarios españoles sobre sus necesidades formativas en competencias directivas. ***Revista de Ciencias sociales, XVIII***, (1), 101-117.

12. Ehrenstorfer, B., Sterrer, S., Preymann, S., Aichinger, R., & Gaisch, M. (2015). Multi-tasking talents? Roles and competencies of middle-level manager-academics at two Austrian higher education institutions. In R. M. O. Pritchard, M. Kumpp, & U. Teichler (Eds.), ***Diversity and Excellence in Higher Education*** (pp. 175-200). Sense Publishers.

13. Elizondo Montemayor, L. (2011). Competencias que debe tener un director académico universitario para la educación superior basada en competencias. ***Revista de investigación educativa, 29 (1),*** 205-208.

14. Fullan, M. (2004). Leadership & sustainability. Ontario Institute for Studies in Education. University of Toronto.

15. Gandolfi, F., & Stone, S. (2018). Leadership, leadership styles, and servant leadership. ***Journal of Management Research, 18 (4)***, 261-269.

16. Incode (2012). Innovation competencies development as integral part of higher education. http://www.incode-eu.eu/en/

17. International Atomic Energy Agency (s.d.). ***The Competency Framework. A Guide to IAEA Managers and Staff***. New York: IAEA

18. Jiménez, CL. (2018). ***Hacia un Modelo de Liderazgo Inclusivo en las Instituciones de Educación Superior en México***. Tesis doctoral, Université de Montréal

19. https://papyrus.bib.umontreal.ca

20. Kerlinger, F. y Lee, H. (2002). ***Investigación del Comportamiento***. México: McGraw-Hill/Interamericana Editores.

21. Ley, T.; Albert, D. (2003): "Identifying employee competencies in dynamic work domains: Methodological considerations and a case study". ***Journal of Universal Computer Science, 9***, (12), 1500-1518.

22. Martínez, A.M.; Hernández, S.M.C. y Gómora, M.J.Y. (2016): Modelo de competencias directivas en escenarios globales para las Instituciones de Educación Superior. ***Revista Iberoamericana para la investigación y el desarrollo educativo, 6***, (12).

23. McClelland, David (1973). Testing for Competence rather than Intelligence. *American Pscyhologist. 28* (1), 1-14.

24. Mintzberg, H. (1989). ***Mintzberg on Management: Inside our Strange World of Organizations***. New York and London: Free Press/Collier McMillan.

25. Nybo, G. (2004): "Personnel development for dissolving jobs: towards a competency- based approach?". *International Journal of Human Resource Management, 15*, (3), 549-564.

26. Puga Villarreal, J., & Martínez Cerna, L. (2008). Competencias directivas en escenarios globales. ***Estudios Gerenciales, 24*** (109), 87-103.

27. Santos, A. C. (2001). ***Gestión de competencias***: Editorial Academia.

28. Scott, G., Coates, H., y Anderson, M. (2008). Learning leaders in time of change. Academic leadership capabilities for Australian Higher Education. ***University of Western Sidney and Australian council of Educational Research.***

29. Seltzer, R. (2020). College Leadership in an Era of Unpredictability. ***Inside Higher ED. Special Report.***

30. Villalobos, T. y Parés, G.I. (2007): Competencias directivas del docente universitario. ***Revista Panamericana de Pedagogía, (10),*** 61-83.

31. Whetten, D. y Cameron, K. (2005). ***Developing Management Skills.*** Prentice Hall, Pearson.

32. White, R.W. (1959). Motivation Reconsidered: The Concept of Competence. ***Psychological Review, 66*** (5), 297-333.

33. Woodruffe, C. (1993): "What is meant by a competency?". ***Leadership & Organizational Development Journal, 14*** (1), 29-36.

34. Zerdeño, C.L.O; Armentos, A.M.C, Sologaistoa, G.A.G; y Villanueva, A.Y. (2014): Competencias directivas: su identificación para las instituciones de educación superior. ***Revista Global de Negocios, 2***, (4), 25-42.

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MANAGERIAL COMPETENCIES AS A KEY FACTOR FOR THE SUCCESS OF HEIS

Actions to strengthen leadership, a **Quebec-Mexico** collaborative study

The purpose of this document is to share a theoretical reflection on the context of the practise of management positions in higher education institutions in Mexico, taking as a point of reference the competencies as a factor of success or lack thereof in the development of managerial action.

The document is composed of four main sections, the first of which provides a general approach to the conceptualization of competencies, the main theme of this research. In the second part, the methodological processes for the collection of information are highlighted.

In the third section, the analysis of the most representative results is presented in a synthetic manner in order to respond to the stated objective.

Finally, the document closes with the presentation of the discussion and conclusions considering continuing the development of the topic in a next stage at a Latin American level.